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Correlations between Developmental Kindergarten
Screenings and Early Reading Indicators One Year Later

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Abstract

School districts in the U.S. are mandated to identify young children with disabilities. Developmental screeners are typically used to screen for such skill deficits. Academic tests are used in older students. A significant challenge is identifying children with potential learning disabilities early in their school career. This study identifies a relationship between language skills on the DIAL-3 developmental screening in kindergarten and literacy skills one year later.

Correlations between Developmental Kindergarten
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The first day of school for 5-year-old kindergartener Sarah, and her parents, is a mixed bag of excitement, apprehension, and perhaps outright fear. Sarah may be nervous or fearful about school rules, fire drills, eating in the crowded cafeteria, and getting on the wrong bus at the end of the day. Sarah's parents may also be concerned about what Sarah will do if she accidentally breaks a school rule, cries during a fire drill or drops her food tray in the cafeteria. Sarah's parents may also secretly wonder whether Sarah will be able to "keep up" with the other kids at school.

Whether our children can keep up is a common fear for parents of young children. For most parents, their fears are relieved when the first big smiley faces, stickers and stars come home on class work, soon followed by a positive conference and good report card. Parents of up to a third of our kindergarten students will have a different experience. Their children may struggle with basic skill sets such as remembering how to count, using a pencil and scissors and answering simple questions. They may be overwhelmed when asked by the teacher to follow a seemingly simple multi-step instruction. A routine direction such as "Get your folder out of your backpack, put your lunch box on the shelf and hang up your coat" can be excruciatingly complex to understand for a youngster with an unidentified receptive language disorder, memory deficit or a hearing problem. To the classroom teacher, Sarah's inability to process the directive may appear more like shyness or noncompliance. However, an incorrect or failed response may also be the first hint of impending academic difficulty.

The kindergarten teacher watches Sarah closely and considers her options. She can speak to Sarah's parents about her concern but of course, she doesn't want to alarm them in these first few days of school. She can make a referral to remedial or special education but these are for the most severe problems—and Sarah doesn't appear to have a disability. Sarah's teacher decides to wait and see how she does—because the other options seem too extreme and, after all, it's only the first week of school. What should Sarah's teacher do? What are the options? Will Sarah's teacher make the right decision?

Child Find

If Sarah had come to school on the first day with an obvious disability that explained her behavior, such as a vision or hearing impairment, her teacher would have known exactly what to do. She would have made a referral for an evaluation. According to Federal Law (IDEA 300.111) “[\(1\)](#) The State must have in effect policies and procedures to ensure that--[\(i\)](#) All children with disabilities residing in the State, ... and who are in need of special education and related services, are identified, located, and evaluated...”

Washington Administrative Code (392-172A-02040) is much more specific requiring local school districts to have policies and procedures in place that describe the methods it uses to conduct child find activities. Procedures may include but are not limited to: written notification to all parents of children in the district, posting notices in schools and public places, offering preschool developmental screening, conducting media campaigns, coordinating distribution of information with other child find programs (e.g. Birth to Three/IDEA Part C), internal district review of students such as screening district-wide test results, in-service education to staff and “other methods developed by the school district to identify, locate and evaluate students including a systematic, intervention based, process within general education for determining the

need for a special education referral” (Washington Administrative Code, 2007). The law is clear--school districts have a duty to identify disabled children. One tool that has been widely used by school districts nationwide is the Developmental Indicators for the Assessment of Learning series. Costenbader et al, report that the DIAL-R was the most common published screening tool being used in their survey of school districts (N=374) with 26% of districts reporting using it and it was second only to locally developed measures which was reported by 30%. The DIAL-3 has been found in the literature to be adequate as a screener for gross developmental delays and incorporates the five developmental areas as required in state and federal law. The DIAL-3 is a useful tool for detecting gross deviations from age-based norms in the developmental skill domain (Costenbader, Rohrer, & Defonzo, 2000).

What is not so clear is predicting, in a beginning kindergarten student like Sarah, what skill deficits are due to a disability versus a lack of exposure to experiences found to enhance skill development and learning. A youngster who has never been allowed to use scissors at home during her first five years of life may function similarly to a student who has an impairment or disability in fine motor coordination. Likewise a youngster who has not been exposed to activities requiring verbal and cognitive flexibility (e.g. riddles, poems, silly songs, story time, et cetera) may appear like a child with language impairment or even mental deficiency to the classroom teacher. The challenge for many educators is determining whether a student’s functional skill level is impacted most by lack of exposure or a true disability.

In considering whether a new kindergarten student may have a disability—particularly a developmental delay-- it’s useful to review the legal definitions. According to Washington Administrative Code 392-172A-01035 (2)(d)(i) Developmental Delay means a child with delays in the areas of Cognitive development (comprehending, remembering, and making sense out of

one's experience); Communication development (the ability to effectively use and understand age-appropriate language); Physical development (fine and/or gross motor skills); Social or Emotional development (the ability to develop and maintain functional interpersonal relationships and exhibit age-appropriate social and emotional behaviors); and/or Adaptive Behavior (the ability to develop and exhibit age-appropriate self-help skills). Washington allows the use of Developmental Delay (DD) as an eligibility category for special education services if the student scores at least two standard deviations below the mean in one or more of the five developmental areas, or one and one-half standard deviation below the mean in two or more of the five developmental areas.

Sarah's teacher knows that once she makes a referral for a special education evaluation it can take several months to complete. By this time approximately one third of the school year has passed and retention is being seriously considered. Retention may have already been brought up to Sarah's parents.

Psycho-educational evaluations not only take time, they take considerable resources. Washington Administrative Code 392-172A-03020 specifies the evaluation procedures. A group of qualified professionals must use a "variety of assessment tools and strategies to gather relevant functional, developmental and academic information about the student," and ensure the student is assessed in all areas of suspected disability. The evaluation must be "sufficiently comprehensive to identify all of the student's special education and related service needs, whether or not commonly linked to the disability category."

Evaluations typically involve several highly-trained staff members, often referred to as specialists, such as an occupational therapist, physical therapist, speech/language pathologist, audiologist, school psychologist, reading specialist, behavior specialist, or autism specialist who

are in short supply and who have large caseloads of students requiring therapy during the school day. Additionally, itinerants' responsibilities typically include record keeping, report writing, Medicaid billing, and meetings in addition to comprehensive student evaluations. Over the past several years school districts have been challenged with meeting their child find obligation to evaluate students, while experiencing severe shortages of the very staff members necessary to conduct sufficiently thorough evaluations to identify their students' needs. *Educator Supply and Demand in Washington* (2006) highlighted the considerable shortage in support staff including school psychologists, occupational therapists, physical therapists, speech-language pathologists and school nurses. This study has been performed every two years since 2000 and shortages for specialist positions have been pervasive across this time.

Many students, who are referred for an evaluation, ultimately are found not eligible for special education services. In the case of our kindergarten student Sarah, she would have to be at least two standard deviations below the mean in one developmental area or one and one-half standard deviation below the mean in two developmental areas in order to be eligible for services as a student with a Developmental Delay. The gap between teacher-identified concern and special education eligibility can be wide.

Retention

When a psycho-educational evaluation does not identify a disability that would allow both the student and the teacher to get some assistance, the teacher may recommend the student be retained in the same grade for an additional year. Some kindergarten teachers recommend retention as an "intervention" even prior to or without additional psycho-educational evaluation data, based solely on classroom performance. Jimerson has found that retention is associated with increased costs and adversely impacts socio-emotional adjustment in students (Jimerson,

2001a, 2001b). Hong & Raudenbush selected data from the Early Childhood Longitudinal Study Kindergarten cohort (ECLS-K) released by the US National Center for Education Statistics to examine school-level data between retention schools and nonretention schools. They found that students who had been retained as kindergarteners demonstrated less growth in both reading and math at third grade than they would have had they been promoted (2005). In spite of many studies failing to show long-term advantages of retention, and increasing numbers of studies showing an adverse impact, retention continues to be considered a valid, and sometimes preferred, intervention by some educators and policy makers.

When the struggling student moves on to upper elementary level (whether she was retained or not) her skills may have had such a flat trajectory both compared to her peers and compared to her aptitude, she may be considered a student with a Specific Learning Disability.

Specific Learning Disability & Response to Intervention

Until recently, in order to be diagnosed as a student with a specific learning disability and qualify for special education services, a student must have demonstrated a severe discrepancy between her overall intelligence and her performance on individually administered standardized, norm-referenced academic tests (OSPI, 2007). Often it takes several years for a student to fall far enough behind to “qualify” for special education services under discrepancy criteria. Often a learning disabled student may have a full scale intelligence quotient in the mid 80’s and a significant discrepancy would require standard scores in the low 70’s on norm-referenced standardized academic tests. This has been dubbed the “wait to fail” approach to special education eligibility because it typically takes several years before a student is this severely behind her norm reference group (Reynolds & Shaywitz, 2009; Fuchs & Fuchs, 2007; Vaughn & Fuchs, 2003; Vervaeke McNamara & Scissons, 2007). According to Lynn and Douglas Fuchs

(2007), learning disability identification utilizing the discrepancy method typically occurs at 5th grade. Although these students are often struggling from their first day of school, prior to about 5th grade, since most struggling students have not fallen behind their peers *enough* and may have low average IQ's they do not meet discrepancy threshold for eligibility. They are *not smart enough* for special education! As those working in the classroom can attest, this can be a long heart wrenching wait for students, parents and teachers.

Once such a discrepancy exists for a student, the evaluation team must determine that the student's discrepancy is not a result of one or more exclusionary factors prior to declaring a student learning disabled. Exclusionary factors include: a visual, hearing or motor disability; mental retardation; emotional disturbance; cultural factors; environmental or economic disadvantage; limited English proficiency; or lack of appropriate instruction in reading or math. In addition, the team must ensure that the student was provided appropriate instruction in general education settings, delivered by qualified personnel prior to determining the student has a learning disability.

With reauthorization of the IDEA in 2004, Congress allowed districts to continue to use the discrepancy method for identifying students with specific learning disabilities however it no longer required this method be used. Congress inserted a provision that allowed a local education agency or school to use a problem solving process based on a student's response to scientific research-based intervention, commonly termed Response to Intervention or RTI.

Core components of RTI include: Scientific research-based interventions which have been implemented with fidelity; a high quality core curriculum designed to meet the instructional needs of all students; two or more intensive scientific research-based interventions, identified to allow the student to progress toward his or her improvement targets; frequent monitoring of

individual student progress; a multi-tiered model for delivering both the core curriculum as well as strategic and intensive interventions in the general education setting; and universal screening and/or benchmarking at fixed intervals at least three times throughout the school year.

Since RTI was approved by Congress in 2004, several products have been brought to market for universal screening, benchmarking and progress monitoring. One of the most widely used products for screening early literacy skills is known as Dynamic Indicators of Basic Early Literacy Skills or DIBELS. DIBELS reading prompts were designed to assess three of the skills that have been identified as critical components of early literacy: phonological awareness, alphabetic principal, and fluency with connected text (Report of the National Reading Panel 2000; McGuinness 2004; McGuinness 2005). DIBELS prompts, provided by the University of Oregon, are quickly and easily administered and are freely available from the DIBELS website. They have been used by teachers and support staff (e.g. Title I programs) for many years to screen and monitor reading skills. A comprehensive (although not exhaustive) reference list of over 170 studies involving the DIBELS is located on the Dynamic Measurement Group website (2008).

Consistent with the legal mandate, several multi-tiered models have been developed. Marston (2003) has studied three models for both learning disability prevention outcomes and acceptable patterns of learning disability identification. He determined that a three-tier model has been shown most efficient and effective. Within the three-tier model, the Tier I group consists of the benchmark students. The largest numbers of students should fall into this group. Approximately 15 to 30% of students do not meet benchmark and are struggling to acquire basic skills. These students are considered to be in the middle or strategic Tier II group and require additional interventions directed at their specific need. An additional 5-20% of students who are

severely behind benchmark criteria are considered the intensive Tier III group. These students are in need of substantial instructional intervention. Once students have been identified and grouped into tiers based upon their fall DIBELS screening score, they are instructed with curriculum and methods, supported by scientifically-based research, to match the specific area(s) of learning skill.

The RTI process shows promise as a strategy for both earlier identification of students with learning disabilities in reading and earlier targeted intervention in students who have already experienced a reading curriculum. However, there remains a gap for our novice students who have not yet been exposed to reading instruction yet may already be at risk of later failure. Primary options for addressing needs of the struggling kindergarten students often include retention and/or referral for a comprehensive evaluation even though, as discussed previously, neither option has a high likelihood of improving the student's classroom performance. Additionally, both options are invasive with significant consequences for the student, parents, and school district.

The present study questions whether later reading skills can be predicted by kindergarten developmental screening. If so, implications for educational practice could save money, prevent difficulties associated with grade retention and give kindergarten teachers a useful tool to understand young students' skill sets to inform curriculum and programming.

Summary

School districts are mandated by the federal and state governments to seek out and identify students who may have a disability and who are in need of special education and related services. At the preschool and kindergarten level, a functional developmental approach is commonly used in both screening and evaluation to assess cognitive, language, motor, adaptive

and social skills. At first grade and beyond, screenings and evaluations take on a more academic flavor as screening and evaluation teams focus on meeting reading, math and writing benchmarks and designing academic interventions for those who do not. A present challenge is maximizing effectiveness of kindergarten screening procedures to provide greater insight into early pre-academic skills deficits so they may be addressed and remediated earlier than first grade and before developing into a learning disability.

In an effort to determine whether a commonly used screening instrument at kindergarten entry is a reliable predictor of later reading skill, the present study seeks to determine whether a correlation exists between kindergarten developmental screening data gathered during the first two weeks of kindergarten (September, 2008) and early reading indicators screening data on the same students gathered approximately one year later (September, 2009). Pre-existing data was analyzed for this study. No new data was collected.

Participants

Participants were 89 students enrolled in a rural public school system in a Pacific Northwest state. All students who participated in all three areas of the kindergarten screen as kindergarteners and who also participated in all four areas of the first grade screen one year later were included. District wide ethnicity is as follows: American Indian/Alaskan Native 2.6%, Pacific Islander 0.2%, Asian/Pacific Islander 1.6%, Black 1.0%, White 89.3%. Free or Reduced-Price Meals were available to 31.4% of the student population as of May, 2009 and 11.4% of the students were enrolled in Special Education Program. Annual Drop-Out Rate (2007-08) was 4.8%, Graduation Rate (2007-08) was 74.1%. Teacher Information: Teachers meeting No Child Left Behind highly qualified definition: 100%. Average years of teacher experience: 12.9.

Students included in the present study participated in the Motor, Concepts and Language screening components of the DIAL-3 screening as kindergarten students in the Fall of 2008 as well as DIBELS screening as first grade students in the Fall of 2009. Students who participated in the DIAL-3 but moved away before first grade screening occurred and first graders who moved in and who were not present in kindergarten for the DIAL-3 screening as kindergarteners were omitted from the study leaving a total sample size of 89. The kindergarten students were spread across three schools and seven teachers. All students were enrolled in an all day, every day program (e.g. no half day or part time students).

A few students were identified as warranting additional follow-up evaluation due to poor scores on one or more areas of the DIAL-3. Some of these students' parents declined additional evaluation to determine whether the child had a moderate developmental delay. Several students went on to have additional evaluations and did not qualify for special education services. A few students (<5) went on to have additional evaluations, qualified for special education services and received an Individualized Education Program addressing the specific areas of developmental delay (e.g. fine motor, speech/language). These students IEP's did not include additional academic interventions beyond the general education classroom (e.g. extra reading assistance).

Instruments

DIAL-3

Instruments used for school entry screening have traditionally been grouped into either readiness/skill or developmental/process oriented (Costenbader, Rohrer, & Divonzo, 2000). Because the original purpose of kindergarten screening was to further enhance the school

district's Childfind efforts, a developmental screener was chosen. The Developmental Indicators for the Assessment of Learning, Third Edition (DIAL-3) was used to assess the child's developmental domains which are thought to be foundational for academic learning. It is based on Janet Lerner's analysis of the relationship between tasks and skill acquisition (Mardell-Czudnowski & Goldenberg, 1998). The DIAL line of screeners (DIAL, DIAL-R, DIAL-3) has been one of the most widely used commercially available developmental screeners for screening children from 3 years up to 7 years of age and bias reviews support the test's appropriateness for use with children from various socioeconomic, cultural and ethnic backgrounds (Pearson/Psychcorp, retrieved 1/3/10).

The DIAL-3 battery includes the assessment of five developmental domains; Social/Emotional Skills, Adaptive/Self-Help Skills, Concepts, Language, and Motor Skills. The areas of Social/Emotional Skills and Adaptive/Self-Help Skills are assessed by parent questionnaire. The areas of Motor Skills, Language Skills and Concepts are assessed by trained evaluators.

The Motor portion of the DIAL-3 consists of items that assess a student's fine and gross motor development. According to Smith (1991) and Fawcett and Nicolson (1995), over 75% of all poor readers have motor disturbances yet only 25% have visual motor disturbance and a number of children with dyslexia have persistent motor deficits that continue into adolescence (in Mardell-Czudnowski & Goldenberg, 1998).

The Language portion of the DIAL-3 consists of items that assess the child's use of receptive language, expressive language, speech production, language-based cognitive abilities and social-affective behavior. Mardell-Czudnowski & Goldenberg report that preschool children with receptive, expressive and/or language retrieval problems are at risk for later

reading disabilities. Willows (1991) notes that although reading problems were originally believed to be caused primarily by visual-perceptual or visual memory deficits, written words are further processed phonetically using verbal information, and therefore reading is also a linguistic task (in Mardell-Czudnowski & Goldenberg, 1998).

The Concepts portion of the DIAL-3 consists of items that address a student's knowledge of basic concepts such as counting and colors (Pearson/Psychcorp, retrieved 1/3/10). According to Bracken (1984), children that have problem understanding concepts are at risk for having school problems (in Mardell-Czudnowski & Goldenberg, 1998). Also included in the Concepts domain is a rapid color naming task which Wolf (1991) has concluded from the literature uses a number of subprocesses related to reading at second grade (in Mardell-Czudnowski & Goldenberg, 1998).

In scoring the DIAL-3, task scores are summed to obtain an item raw score which is converted to an item scaled score. The scaled scores are a functional 5-point scale ranging from 0 to 4 with 4 as the highest. They are summed to obtain a scaled score total. The three subtest scaled score totals (Motor, Language, Concepts) are summed to obtain the DIAL-3 Total Score.

The internal consistency of the scales are reported as follows: Motor .66, Concepts .86, Language .77, DIAL-3 Total .87. The test-retest reliabilities of the scales for the age-group in this study are as follows: Motor .67, Concepts .74, Language .78, DIAL-3 Total .84. The publisher's technical information reports valid intercorrelations, with the DIAL-R; Early Screening Profiles; Battelle Developmental Inventory Screening Test; Bracken Basic Concept Scale Screening Test, Form A; Brigance Preschool Screen; Differential Ability Scales (DAS); Peabody Picture Vocabulary Test, Third Edition (PPVT-III) and Social Skills Rating System

(SSRS). No predictive validity studies have been reported, (Pearson/Psychcorp, retrieved 1/3/10).

Two additional components of the DIAL-3, Social Skills and Self-Help Skills are not evaluated as part of this study primarily because many parents did not return the completed questionnaire to their child's teacher. The parents' contribution to this screening per the Social Skills and Self-Help Skills scaled scores are not components of the DIAL-3 Total Score. Table 1 shows the intercorrelations between the Motor, Concepts Language and Total scaled scores included in the DIAL-3 assessment.

Table 1

Intercorrelations between DIAL3 Areas as reported in the DIAL3 Manual

	DIAL3 Motor	DIAL3 Concepts	DIAL3 Language	DIAL3 Total
DIAL3 Motor	1.0	.50	.41	.76
DIAL3 Concepts		1.0	.65	.87
DIAL3 Language			1.0	.81
DIAL3 Total				1.0
<i>N</i>	1559	1559	1560	1560

Note: Reproduced from DIAL-3 Manual (Mardell-Czudnowski & Goldenberg, 1998)

DIBELS

Dynamic Indicators of Basic Early Literacy (DIBELS) is an individually administered measure of early literacy skills (Dynamic Measurement Group, 2009). The DIBELS Letter Naming Fluency (LNF), Phoneme Segmentation Fluency (PSF) and Nonsense Word Fluency (NWF) measures were administered.

Letter Naming Fluency (LNF) is a standardized individually administered test to determine how many letter names a student can produce orally in one minute when provided with a full page probe that includes over 100 upper and lower case letters.

Phoneme Segmentation Fluency (PSF) is a standardized individually administered test of phonological awareness. The PSF measures a student's ability to segment multi-phoneme words into their individual phonemes fluently. The number of correct phonemes produced in one minute determines the final score.

Nonsense Word Fluency (NWF) is a standardized individually administered test of the alphabetic principle including letter-sound correspondence. The student is allowed one minute to produce as many letter-sounds as he/she can and the final score is the number of letter-sounds produced correctly in one minute

Published studies on the DIBELS have demonstrated reliability above .80 in first grade students and moderate to strong intercorrelations between the DIBELS and the Comprehensive Test of Phonological Processing subtests (Kaminski & Good, 1996; Hintze, Ryan, & Stoner, 2003). Intercorrelations between DIBELS subtests could neither be located in the DIBELS technical materials nor in the literature.

Procedure

Kindergarten students were screened, arena style, in a central location in each school. Two stations for each skill area of Motor, Concepts, Language, were set up and students were guided to each station by an instructional assistant, parent volunteer or staff member. Language was assessed by licensed and state certified speech/language pathologists; Motor was assessed by a licensed certified occupational therapist and a certified occupational therapy assistant. Concepts

were assessed by a certified school psychologist and a trained instructional assistant. All kindergarten students were screened over a one-week period within the first two weeks of school. First grade students were screened individually over a one week period by instructional assistants per the DIBELS administration protocol. The instructional assistants had training and practice with administration and scoring of the DIBELS prior to administration.

Data Analysis

Statistical Program for the Social Sciences (SPSS) Version 17 computer software was used to calculate the means, standard deviation, correlations and significance.

Results

Displayed in Table 2 are the means and standard deviations of the six variables included in this study. In this sample of students, the average DIAL3 scores were in the low risk range which, depending on age, fell at a scaled score of approximately 17 or above. On the DIBELS Nonsense Word Fluency, the mean fell in the low risk range. Letter Naming Fluency barely fell into the low risk range and the Phoneme Segmentation Fluency mean was clearly within the at risk range.

Table 2

Mean and Standard Deviations

Instrument	M	SD
DIAL3 Motor Scaled Score	20.3	4.60
DIAL3 Concepts Scaled Score	21.8	4.23
DIAL3 Language Scaled Score	19.8	4.00
DIAL3 Total Scaled Score	62.0	10.81
DIBELS Letter Naming Fluency	37.1	16.41
DIBELS Phoneme Segmentation Fluency	28.4	13.88
DIBELS Nonsense Word Fluency	28.8	20.70

Note: . DIAL3, Developmental Indicators for the Assessment of Learning, Third Edition; DIBELS, Dynamic Indicators of Basic Early Literacy Skills. Mean age of students in this study: 66 months. According to the DIAL3 Manual, the means and standard deviations in the age-matched norm sample were: Motor: M=20.7, SD=5.0; Concepts: M=22.4, SD=4.5; Language: M=20.7, SD= 4.1, Total: M=63.7, SD=11.3. On the DIBELS, according to Good et al, (2002) the means and standard deviations in the grade-matched norm sample were: LNF: M=41.18, SD=18.47; PSF: M=35.22, SD=18.94; NWF: M=30.81, SD=22.45.

Table 3 shows that correlations were in the moderate range and statistically significant for all correlations performed. The weakest correlations were between DIAL3 Concepts and DIBELS Phoneme Segmentation Fluency ($r=.30$), Nonsense Word Fluency ($r=.33$) and DIAL3 Motor and Nonsense Word Fluency ($r=.33$). The strongest correlations were between DIAL3 Language and DIBELS Phoneme Segmentation Fluency ($r=.55$) and Letter Naming Fluency ($r=.50$).

Table 3

Correlations between DIAL3 Scaled Scores and DIBELS Measures, N=89 for all cells

	1	2	3	4	5	6	7
1 DIAL-3 Motor	1	.56**	.60**	.87**	.37**	.48**	.33**
2 DIAL-3 Concepts		1	.60**	.83**	.42**	.30**	.33**
3 DIAL-3 Language			1	.85**	.50**	.55**	.41**
4 DIAL-3 Total				1	.49**	.52**	.42**
5 DIBELS Letter Naming Fluency					1	.51**	.75**
6 DIBELS Phoneme Segmentation Fluency						1	.49**
7 DIBELS Nonsense Word Fluency							1

**. Correlation is significant at the 0.01 level (1-tailed)

Note: DIAL-3 Developmental Indicators for the Assessment of Learning, Third Edition.

DIBELS: Dynamic Indicators of Basic Early Literacy Skills, 6th Edition.*Additional Analysis*

In addition to the analysis of correlations between subtests on the two screening instruments, three standard multiple regression analyses were performed between the scores on the three DIBELS assessments and the three DIAL-3 screening areas of Motor, Concepts and Language.

Letter Naming Fluency was used as the dependent variable in the first analysis with language, concepts and motor scaled scores entered as the independent variables. In this

analysis, the adjusted $R^2 = .25$, $F(3,85) = 10.55$, $p < .001$ however only Language contributed significantly to the Letter Naming Fluency ($\beta = .36$, $p = .006$).

In the second analysis, Phoneme Segmentation Fluency was entered as the dependent variable. In this analysis, the adjusted $R^2 = .34$, $F(3,85) = 14.81$, $p < .001$. Two variables contributed to Phoneme Segmentation Fluency, Language ($\beta = .46$, $p < .000$), and Motor ($\beta = .28$, $p < .02$).

Nonsense Word Fluency was the dependent variable in the third analysis. A statistical significance is again noted with an adjusted $R^2 = .18$, $F(3, 85) = 6.35$, $p = .001$. Language was a statistically significant contributor ($\beta = .29$, $p = .03$). Neither Motor nor Concepts areas contributed to the model.

Discussion

Results of the current study provide only mediocre support for use of the DIAL-3 subtests to predict later skill on early literacy measures. Not surprisingly, the DIAL-3 Language subtest correlated more strongly with all DIBELS tests and especially with Phoneme Segmentation Fluency which examines phonemic awareness skills. However, the DIBELS PSF is not appropriately administered to early kindergarten students and the earliest this test should be given is after the students have been taught all the sounds which for most students is toward the end of kindergarten (Linklater et al 2009). Thus, consideration of using the less expensive pre-reading screener is not a appropriate substitution in kindergarten students.

As noted earlier, the DIAL3 Language test includes components of seven conceptual areas. The maximum raw score a student can receive is 78 however the scoring protocol reduces a raw score of 78 to a scaled score of 27. If a student is strong in a few areas, a “passing” score may result due to this reductionist scoring protocol that may, in effect, hide an area of potential

delay or disability. The DIBELS PSF assesses a more discrete component (although not completely isolated) of expressive language. Other than listening to and comprehending the directions, there are no measures of intelligibility, problem solving, or vocabulary. Therefore, it is not surprising that the DIAL3 and the DIBELS are only moderately correlated on language measures.

The Concepts and Motor Skills tests of the DIAL-3 screener have similar scoring difficulties. The Motor component screens for Fine and Gross Motor (with some embedded Visual Perceptual Skills tasks although this is not mentioned in the manual) and the Concepts includes some receptive language tasks, vocabulary, counting, and rapid color naming. Without norms for discrete tasks, it is unclear what the overall score actually means for educational planning. Since the DIAL3 is a screening tool, it would be premature to place a student into special programming based on failure of the screen alone, but a failure should prompt a more exhaustive review of the students' skills before drawing conclusions or planning interventions. Additionally, training those who administer and/or score the screener in examining the conceptual tasks within each area (e.g. which of the seven conceptual tasks within the Language area are a strength or weakness for individual students) for low scoring outliers may further improve the screener's ability to effectively refer a student for additional assessment who may have otherwise been missed.

In summary, the present study shows that reading achievement in early first grade is only moderately predicted by the DIAL-3 screening in kindergarten and the language components are more highly correlated with DIBELS tests than are the Concepts or Motor components.

Implications for Practice

The present study was performed, in part, to assist in guiding screening practices in this rural school district that is making efforts to identify potential learning disabled students as young as possible to offer early intervention, yet also meet the ChildFind obligation to identify children with Developmental Delays. This study suggests that the DIAL-3 and DIBELS measure different constructs with some mild to moderate overlap. This is not too surprising as the DIAL-3 is conceptually a developmental screener and has not been designed as a readiness screening tool. Based upon the present data, it would be prudent to retain the developmental screening process utilizing a developmental screener in order to ensure identification of delayed children. It may also be appropriate to consider either adding a readiness screener to the kindergarten screening process or consider whether deconstructing the scoring protocol to examine individual Language component areas of the DIAL-3 may provide the readiness measures which may better predict reading skill later on.

Limitations and Areas for Future Research

This is a predictive validity study involving only three schools and 89 students. Students that had completed a recent comprehensive psycho-educational evaluation prior to the kindergarten screening were excluded from the screening and thus excluded from the study. It is possible that had those students been included that the correlations may have been larger since inherent in a referral is at least a suspicion of a delay in some area. The present study analyzed data collected after only one year which is a small interval in the continuum of reading instruction. The present study only analyzed decoding-related indicators with neither a measure of reading

connected text nor reading comprehension which are both integral in the development of strong overall functional reading skills.

Future research focusing on early reading indicators could more closely examine the amount that discrete components of language including phonemic awareness, receptive language, expressive language, vocabulary, and verbal memory in early kindergarten students ensure adequate development to tackle complex tasks associated with learning to read. Studies linking discrete language component screening as preschoolers or early kindergarten students to reading fluency in connected text and measures of reading comprehension several years later may provide a more valid approach to predicting later reading skills in very young inexperienced learners.

References

- Costenbader, V., Rohrer, A. M. & Difonzo, N. (2000). Kindergarten Screening: A Survey of Current Practice. *Psychology in the Schools*, 37(4), 323-332.
- Dynamic Measurement Group. (2008). *DIBELS Research References*. Retrieved 10/26/09 from www.dibels.org.
- Dynamic Measurement Group. (2009). *General Questions about DIBELS*. Retrieved 10/26/09 from www.dibels.org/faqs.html.
- Fuchs, L.S., & Fuchs, D. (2007). A Model for Implementing Responsiveness to Intervention. *Teaching Exceptional Children*, 39, 14-20.
- Good, R. H., Wallin, J., Simmons, D. C., Kame'enui, E. J., & Kaminski, R. A. (2002). System-wide Percentile Ranks for DIBELS Benchmark Assessment (Technical Report 9). Eugene, OR: University of Oregon.
- Hintze, J. M., Ryan, A. L., & Stoner, G. (2003) Concurrent Validity and Diagnostic Accuracy of the Dynamic Indicators of Basic Early Literacy Skill and the Comprehensive Test of Phonological Processing. *School Psychology Review*, 32, 541-556.
- Hong, G., & Raudenbush, S. W. (2005). Effects of Kindergarten Retention Policy on Children's Cognitive Growth in Reading and Mathematics. *Educational Evaluation and Policy Analysis*, 27, 205-224.
doi:10.3102/01623737027003205
- Jimerson, S. R. (2001). Meta-analysis of Grade Retention Research: Implications for Practice in the 21st Century. *School Psychology Review*, 30, 420-437.

- Kaminski, R. A. & Good, R. H. (1996). Toward a Technology for Assessing Basic Early Literacy Skills. *School Psychology Review*, 25, 215-227.
- Mardell-Czudnowski, C., Goldenberg, D. S. (1998). *Developmental Indicators for the Assessment of Learning* (3rd ed.). Circle Pines, Minnesota: American Guidance Service, Inc.
- Marston,D.(2003, December). Comments on Three Papers Addressing the Question “*How many tiers are needed within RTI to achieve acceptable prevention outcomes and to achieve acceptable patterns of LD identification?*” Paper presented at the National Research Center on Learning Disabilities Responsiveness-to-Intervention Symposium, Kansas City, MO.
- McGuinness, D. (2004). *Early Reading Instruction*. Cambridge: MIT Press.
- McGuinness, D., (2005). *Language Development and Learning to Read*. Cambridge: MIT Press.
- Office of the Superintendent of Public Instruction, State of Washington (2007). *Rules for the Provision of Special Education to Special Education Students, Chapter 392-172A WAC*. Available at: <http://apps.leg.wa.gov/WAC/default.aspx?cite=392-172A>
- Office of the Superintendent of Public Instruction. (2009). Washington State Report Card, for Eatonville School District, **Retrieved October 25, 2009.**
<http://reportcard.ospi.k12.wa.us/summary.aspx?groupLevel=District&schoolId=198&reportLevel=District&orgLinkId=198&yrs=&year=2008-09>
- Office of the Superintendent of Public Instruction. (2006). *Educator Supply and Demand in Washington 2006*. **Retrieved October 31, 2009.**
<http://www.k12.wa.us/certification/pubdocs/SupplyDemand2006.pdf>

Office of the Superintendent of Public Instruction. (2007). *Identification of Students with Specific Learning Disabilities Severe Discrepancy Tables*. Available at:

http://www.k12.wa.us/SpecialEd/pubdocs/SLD_Guide.pdf

Pearson/PsychCorp (2009) DIAL-3 Technical Information. Retrieved January 3, 2010.

<http://psychcorp.pearsonassessments.com/pai/ca/relatedinfo/dial-3technicalinformation.htm>

Reynolds, C.R., & Shaywitz, S.E. (2009). Response to Intervention: Ready or Not? Or, From Wait-to-Fail to Watch-Them-Fail. *School Psychology Quarterly*, 24, 130-145.

Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature (2000). National Reading Panel. **Retrieved October 25, 2009.**

http://www.nichd.nih.gov/publications/nrp/upload/smallbook_pdf.pdf.

US Department of Education. (2004). Building the Legacy: IDEA 2004 Washington, DC: U.S.

Retrieved October 25, 2009,

<http://idea.ed.gov/explore/view/p/,root,regs,300,B,300%252E111>,

Vaughn, S., & Fuchs, L. S. (2003). Redefining learning Disabilities as Inadequate Response to Instruction: The Promise and Potential Problems. *Learning Disabilities Research & Practice*. 18(3), 137-146.

Vervaeke, S, McNamara, J. K., & Scissons, M. (2007, April). Kindergarten screening for reading disabilities. *Journal of Applied Research on Learning*. 1,1, Article 5, pp. 1-19.

Washington Administrative Code (2009) *Chapter 392-172A WAC*. Available at:

<http://apps.leg.wa.gov/WAC/default.aspx?cite=392-172A>